


Eat Smart Be Smart


Iron


Investigation


 **Grade Level:** Third

Lesson Time: 30 Minutes

 **Integrated Core Subjects:** Science and Health Enhancement

 **Montana Content Standard:** Science 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate and communicate results and reasonable conclusions of scientific investigations.

 **Montana Content Standard:** Health Enhancement 1: Students have a basic knowledge and understanding of concepts that promote comprehensive health.

 **Objectives:** Students will recognize facts about the mineral iron and its importance for growing strong bodies and keeping healthy; identify a process (using magnets) for identifying iron in cold breakfast cereals; and identify

Lesson/Activity

1. In this lesson, minerals will be reviewed, specifically iron in an experimental way.
 2. Review the "Nifty Nutrient" lesson about minerals with the students. Provide the students with important facts about iron. Use the listed teacher reference handouts and Web sites for facts. Some facts to include:
 - Iron is a mineral that is needed for good health by helping your blood transport iron from the heart to the rest of the body.
 - Iron is important to the formation of hemoglobin which is the part of the red blood cells that carry oxygen throughout the body. Red blood cells circulate throughout the body to deliver oxygen to the cells.
 - Iron is what makes the blood red.
 - Without enough iron we may feel tired and weak.
 3. Reinforce the importance of eating foods that are high in iron every day. Review as a class good food sources of iron. If possible, show pictures of these foods. Make a list of five iron-rich foods on the board and have the children write them in their science or health journals.
 - Iron is found in grains—whole wheat and enriched grains.
 - Vegetable sources include leafy greens like spinach and baked potatoes with the skins.
 - Fruit sources are dried fruits like raisins, figs or prunes.
 - Dairy foods are not a good source of iron.
 - Red meats are the best source, but dark poultry, tuna, salmon, eggs, and dried beans and peas are also excellent sources
- from the meat group. You can also get iron from cooking in an iron cast skillet or fry pan.

Materials Needed




- Four types of Iron-fortified cereal (i.e., Total®, Rice Krispies®, Shredded Wheat®, and a popular high-sugar cereal). Having the boxes is recommended so the Nutrition Facts Label can be observed.
- Plastic sandwich bags (seal top) and paper bowls for four groups.
- Four—1/2 cup and 1 cup measures; 4 cups of water
- Four small magnets or magnet wands
- Four hand lenses/magnifying glass
- A copy of the Science Inquiry Work sheet on Iron Investigation
- A copy of the Iron Investigation worksheet for each pair of students
- Teacher References: All About Iron for Women and Children handout
- Information on Iron: <http://kidshealth.org/kid/nutrition/food/minerals.html>
- Information on Vitamin C: http://kidshealth.org/kid/stay_healthy/food/vitamin.html

Continued on next page


Continued from front page

4. Divide the students into four groups. Discuss the concept of magnetism with the class. Point out that materials assert attractive or repulsive forces on other materials. Using a magnet, show how magnets are attracted to metals in the classroom.
5. Distribute the Science Inquiry Work sheet: Iron Investigation. As a class, brainstorm appropriate procedures for determining if there is iron in the cereal. Have the students complete questions 1 - 2 on their work sheet. Divide the students into four groups and ask them to conduct an experiment to determine how much iron is in the cereal. Give each group 1 plastic bowl, a magnet, 1/2 and 1 cup measuring cups, 1 box of cereal, and water. Have one student measure 1 cup of water and pour it into the bowl. Have another student measure 1/2 cup cereal into a sandwich bag and seal the sandwich bag. Have another student gently crush the cereal into small pieces. Have another student open the bag and pour cereal into the bowl filled with water. Using the magnet, have the students take turns gently stirring the cereal around the water (for at least 3 to 5 minutes). Without touching the part of the magnet that was used for stirring, ask the students to take the magnet out and carefully observe it. Investigate it with the magnifying glass and discuss what they see. The iron fragments (black in color) will have adhered to the magnet. This is the same iron that is part of hemoglobin in our red blood cells. It helps red blood cells transport oxygen throughout our bodies. Ask them to draw their observations on their work sheet. Ask the class to explain their observations and then have them complete question 4 on their work sheet.
6. Do they see any differences in the amount of iron fragments on the different types of cereal? Ask the students to look at the Nutrition Facts for iron on the cereal boxes. The higher the percent Daily Value (DV) for iron, the more iron will be in the cereal. Ask the students to rank the cereals from the highest to the lowest amount of iron and then complete question 5 on their work sheet. Eating a cereal that is high in iron is one way to get enough iron into your diet. Which cereal would they want to choose based on the iron content and which one on taste?
7. Review with the students that there is a vitamin that acts as a helper to iron, vitamin C. Vitamin C helps our bodies absorb the iron in foods. It is a good idea to pair high iron foods with high vitamin C foods (like oranges, grapefruit, strawberries, tomatoes, broccoli, green peppers, kiwi) to get the most iron from our food.
8. To conclude the lesson, distribute the Iron Investigation work sheet and have students work in pairs to complete it. Reinforce the importance of eating iron-rich foods each day.

Outcome Goals

-  Students will know why iron is important for them and identify foods high in iron.
-  Students will conduct an experiment to determine if there is iron in cereal.
-  Students will plan a breakfast to include a high iron and a vitamin C food.

Extending the Lesson

-  For an art project, have the children draw a picture of themselves doing a favorite physical activity or hobby on a piece of paper. Have them surround the drawing with pictures from a variety of iron-rich foods they enjoy. The students may draw the foods or clip them from food packaging or magazine advertisements. At the bottom of the page, have them complete the sentence, "Iron Rich Foods like <list the foods they chose> give me the energy to <list the activity being done on the paper>."

Eat Smart Be Smart

Acknowledgments/Adapted From
**Louisiana Department of
Education and
Denise Zimmer, RD**